

## Overassessment in higher education: does less mean more?

**Lucia Galvez-Bravo**

*Natural Sciences and Psychology, Liverpool John Moores University, James Parsons Building, Liverpool L3 3AF, UK*

Contact: [li.galvezbravo@ljmu.ac.uk](mailto:li.galvezbravo@ljmu.ac.uk)

### Abstract

*In spite of recent claims of the need to reduce overassessment in higher education, there is a surprising lack of consensus of what this term really means together with a lack of empirical evidence of the effects of multiple assessments on student learning and achievement. This study explored the relationship between student achievement and number of assessments, and their potential links to student satisfaction, based on data from modules of the School of Natural Sciences and Psychology, LJMU during 2014/15. The trends found suggest that there is no relationship between fewer assessments and improved academic performance. Indeed, there was a slight trend showing the opposite and, further, modules with more assessments recorded higher feedback (module appraisal) marks. This paper discusses the potential implications of the results in the context of overassessment concerns. Suggestions are given for practice to clarify the concept and shed light into its potential implications.*

### Keywords

overassessment, mean marks, student satisfaction, summative assessment, workload

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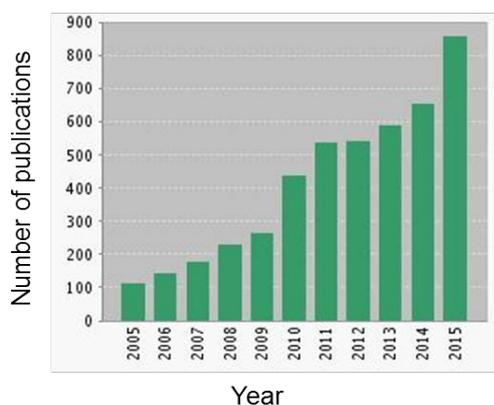
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## Introduction

Assessing learning is an integral part of any educational system and particularly so in HE, where individuals obtain a specific accreditation for certain skills and abilities related to their chosen career. The literature often stresses the importance of ‘constructive alignment’ (Biggs, 1999), where learning outcomes, teaching methods and assessments are ideally aligned and in harmony with each other (*cf.* Race et al., 2005; Boud and Falchikov, 2007). This view is shared by regulatory organisations such as the Quality Assurance Agency for Higher Education (QAA) (2012), who also state that, “assessments should be conducted with rigour, probity and fairness” (p. 7). The importance of assessment is reflected in the large body of pedagogic research: a search for the words “assessment” and “higher education” in the Web of Knowledge database yielded 4,574 articles in the Education and Educational Research subject areas (accessed 30 September 2016). This interest has witnessed an exponential increase in the past decade:



However, in practice, teaching methods are often given more attention by teachers, while reflection on and development of assessment methods have tended to be neglected (Price et al., 2011, but see Gibbs and Simpson, 2004). One of the crucial features of assessment in HE is its complexity (Price et al., 2011). Assessment methods need to be varied and flexible, in order to account for the variety of learning

outcomes and/or skills that they assess (Race et al., 2005; George, 2009; Yorke, 2011), and the diversity of student abilities and learning modes. Assessments can either be formative or summative. Summative assessments are those related to a final measure, mark or grade that classifies students and measures their achievement; formative assessments do not have an associated grade, but give students information about their progress and rely heavily on feedback to aid student progression. Balancing both types of assessment is an on-going challenge for the educational practitioners (Brown and Knight, 2004; Gibbs and Simpson, 2004; George, 2009; Price et al., 2011; Lau, 2015).

Bearing all this in mind, it is not surprising that assessments are feared by students and teachers alike. Student surveys systematically reveal that assessment is one of the aspects with least student satisfaction (Knight, 2002a, Yorke, 2010, Price et al., 2011), sometimes almost 20 per cent lower than other aspects (Higher Education Funding Council for England, 2015). Pedagogic research also identifies assessment-related issues as one of the main problems in HE (e.g. Price et al., 2011; Knight, 2002a). Pedagogic literacy of teachers, with respect to assessment, is a major concern in terms of professional development and practice, and time and effort that could be devoted to improved assessment practice are often overridden by teaching and administrative constraints (Price et al., 2011).

This paper focuses on a relatively unexplored topic - overassessment. It will address its (lack of) definition, implications and will explore relationships between number of assessments, student performance and student feedback.

## Overassessment: concept, definition and approaches

In recent years there has been recurrent debate about the problem of

overassessment in HE (*cf.* Hornby and Laing, 2003; Boud and Falchikov, 2007; Price et al., 2011). There is concern that a large number of assessments and/or repeated assessment of the same learning outcomes may be over-doing the time spent measuring performance and can lead to surface and partial learning, rather than focusing on deeper learning or a real attainment of knowledge and learning outcomes (Boud, 2007; George, 2009). Although there is no formal definition of overassessment in quantitative terms, typically it implies tipping the balance towards summative assessments, to the detriment of formative ones (Price et al., 2011; Hornby and Laing, 2003). Some authors argue that “overassessment is a symptom of an inefficient assessment regime” since it can have undesired effects on feedback, decreasing its quality and increasing turnover times (Hornby and Laing, 2003: 6). There are also concerns that in programmes with several summative assessments more students will disengage (Price et al., 2011) and not work to their fullest potential if the weight of each assessment is low. From a practical point of view, a greater number of assessments is less manageable in terms of marking, especially if a, typical, 15-day turnover is expected in UK universities. There can be various triggers for overassessment, such as modularisation, poor design, excess learning outcomes or pressure from faculty or university policy (Hornby and Laing, 2003). Surprisingly, widely used pedagogical textbooks, such as Brown and Knight (2004), Race et al. (2005) and Falchikov (2007), fail to consider the issue of overassessment, or do not discuss the ideal number of assessments needed to achieve learning outcomes. There is also a surprising lack of empirical evidence to prove whether overassessment “may lead to poorer grades, student and tutor fatigue, lower student morale and negative feedback about modules” (Hornby and Laing, 2003: 7). Bearing in mind this vacuum in the definition of such an important issue and lack of clear pedagogic guidelines, this study

set out to test whether fewer assessments can really be linked to student success.

### Study aims and context

This study explores the relationship between student achievement and number of assessments. It is set in the context of recommendations to teaching staff at LJMU’s School of Natural Sciences and Psychology about tackling overassessment and recommendation to reducing the number of summative assessments per module, typically, from three or four to two. The main hypothesis tested is that modules with fewer assessments will have higher mean marks, and that performance (mean mark) in modules with two assessments will be higher than in modules with three or four assessments.

The relationship between student satisfaction marks (from module appraisal) and number of assessments is also explored.

### Method

A statistical exploration of the relationship between the number of assessments and student performance was the chosen approach. Student grades (marks) were used as a proxy for student performance and meeting of learning outcomes. It was decided to use the mean mark per module in order to dilute any influence of type of assessment on the marks of individual students and any effects of students with special issues (such as specific learning needs). The data used were anonymous, which eliminates transgressing any ethical concerns.

The study was based on data from Natural Sciences modules during the 2014/15 academic year. Modules span all degree years (Levels 4 to 6) and taught as part of the Biology, Animal Behaviour, Zoology, Wildlife Conservation, Geography and Forensic Anthropology BSc honours programmes. Data used included that

supplied in: LJMU WebHub (mean module marks, number of students per module, mean student feedback/module appraisal mark); module guides on Blackboard (number and type of assessment) and module appraisal marks (from WebHub).

In order to apply some control for the potential effects of assessment type, a synthetic variable named 'exam ratio' was created by calculating the proportion of exams/tests within the assessments of each module (number of exams/total number of assessments). Two main questions addressed were:

- Do modules with fewer assessments show higher performance (mean module mark)?
- Do modules with fewer assessments show a higher module appraisal (mean feedback mark) mark?

These questions were explored taking into account the year of study (level), number of students and assessment type (exam ratio).

### Data analyses

The data gathered were analysed in a step-wise fashion, testing potential relationships first and then exploring differences in marks and feedback between different levels of 'assessment number' (two, three and four assessments). The data were initially tested for normality (mean module mark: Shapiro Wilk<sub>56</sub>: 0.972,  $p=0.212$ ; mean feedback mark: Shapiro Wilk<sub>56</sub>: 0.964,  $p=0.093$ ) and parametric statistics were used. Pearson's correlations were applied to test the relationship between mean module mark and number of assessments, number of students, mean module feedback mark and exam ratio. Correlations were also used to test relationships between feedback marks and number of assessments, number of students and exam ratio.

After this initial exploration of the data, two GLM models were carried out, with mean module mark and mean feedback as

dependent variables, Number of assessment (two, three, four) and Level as factors, and number of students and exam ratio as covariates.

- Model1: Mean mark  $\sim$  No. ass\*Level + no. students + exam ratio
- Model 2: Mean feedback  $\sim$  No. ass\*Level + no. students + exam ratio

Model assumptions were tested and confirmed. Levene's test for homogeneity of variances:

- Model 1:  $F_{8,47}=1.178$ ,  $p=0.333$
- Model 2:  $F_{8,47}=1.521$ ,  $p=0.176$

### Results

A total of 56 modules were considered in the study. The total number of students in the study cohort was 4,736 (but some students could be taking more than one module), with an overall mean of 84.6 ( $\pm 68.4$  s.d.) students/module. Average number of students for Levels 4, 5 and 6 was 149.5 ( $\pm 95.0$  s.d.); 78.15 ( $\pm 49.1$  s.d.) and 57.5 ( $\pm 43.5$  s.d.), respectively. Most modules (80.4 per cent, 45) had three assessments, six (11 per cent) had two assessments and five (nine per cent) had four assessments. Overall mean mark for all modules was  $61.16 \pm 5.16$  (s.d.).

Pearson's correlation revealed a positive but non-significant relationship between mean marks per module and number of assessments (Table 1), i.e. the greater the number of assessments, the higher the mean grades. The relationships with number of students and exam ratio were negative (i.e. lower marks if there are more students and more exams), but these observed trends were non-significant (Table 2). The positive relationship between Mean module mark and student feedback was highly significant (Table 1, Figure 2): student module evaluation scores were higher in those modules that had higher mean marks.

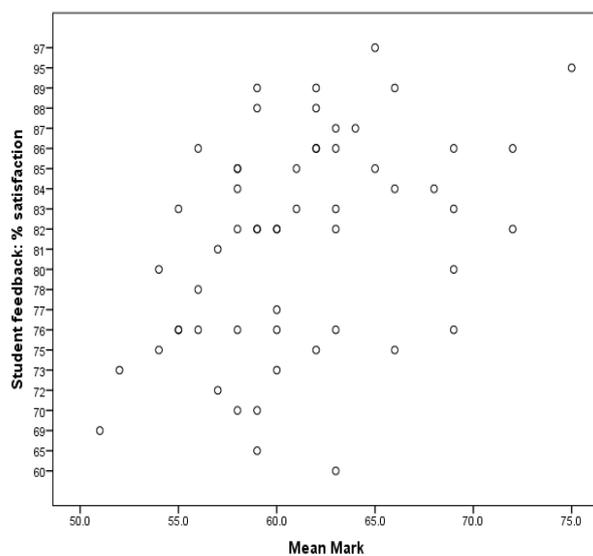
The relationship between feedback marks and number of assessments was positive,

but non-significant (Table 2). The relationship between feedback marks versus number of students and exam ratio were negative, but non-significant (Table 2).

**Table 1:** Pearson's Correlations between mean module mark and mean feedback mark (from module appraisal) and number of assessments per module and other potentially influential parameters (df = 56 for all correlations) for the 2014/15 NATSCI modules of the School of Natural Sciences and Psychology, LJMU.

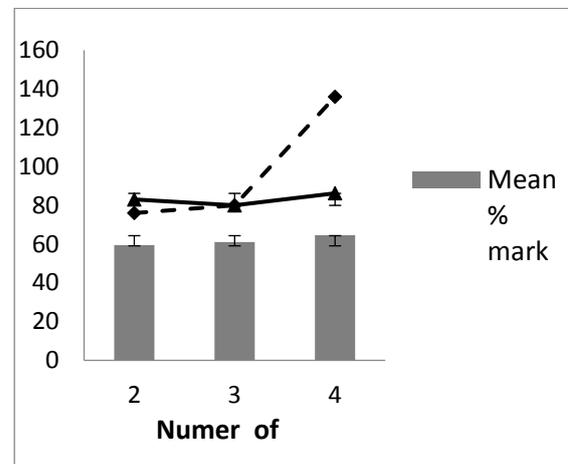
	Mean module mark	Mean feedback mark (module appraisal)
Mean module mark		+0.403, p=0.002
No. assessments	+0.214, p=0.113	+0.081, p=0.554
No. students	-0.175, p = 0.197	-0.159, p = 0.243
Exam ratio	-0.117, p = 0.392	-0.178, p = 0.191
Mean feedback mark	+0.403, p=0.002	

**Figure 2:** Scatterplot of relationship between mean mark per module and mean student feedback mark (from module appraisal) for the 2014/15 NATSCI modules of the School of Natural Sciences and Psychology, LJMU.



Mean marks of modules with four assessments were highest (than those with two or three, Figure 3), but this trend was not significant (Table 2). The effects of number of students, exam ratio, level (year) and the interaction between number of assessments and level were all non-significant (Table 2).

**Figure 3:** Mean ( $\pm$  s.d.) mark of modules with two, three and four assessments in the 2014/15 NATSCI modules of the School of Natural Sciences and Psychology, LJMU. Mean number of students per module and mean % feedback ( $\pm$  s.d.) for modules with two, three and four assessments are also shown.



**Table 2:** Results of GLM model to test the influence of Assessment number on mean module mark in the 2014/15 NATSCI modules of the School of Natural Sciences and Psychology, LJMU.

	Type II Sum of squares	df	Mean square	F	p
Intercept	30255.3	1,	30255.3	1454.2	0.0
	15	7.2	15	27	00
Assmnt (2,3,4)	101.953	2,	50.976	1.243	.37
		4.1			8
		30			
Level (4, 5, 6)	39.708	2,	19.854	.560	.59
		6.1			8
		10			
No. students	1.061	1,4	1.061	0.048	.82
		5			7
Exam ratio	7.967	1,4	7.967	.363	.55
		5			0
Assessm ent no * Level	166.437	4,	41.609	1.898	127
		45			

There was no significant effect of the number of assessments on module feedback marks (Table 3), although mean feedback marks were slightly higher in modules with four assessments (Table 4). The effects of number of students, exam ratio, level (year) and the interaction between number of assessments and level were all non-significant (Table 4).

**Table 3:** Results of GLM model to test the influence of Assessment number on mean feedback mark in the 2014/15 NATSCI modules of the School of Natural Sciences and Psychology, LJMU.

	Sum of squares	df	Mean square	F	P
Intercept	56889.793	1, 46,9 47	56889.793	2534.821	0.000
Assmnt (2,3,4)	235.834	2, 4.32 0	117.917	3.185	.141
Level (4, 5, 6)	2.966	2, 9.72 8	1.483	.037	.964
No. students	31.791	1,45	31.791	.674	.416
Exam ratio	33.419	1,45	33.419	.708	.404
Assessment no * Level	146.849	4, 45	36.712	.778	.545

**Table 4.** Mean and S.D marks (grades) and module appraisal marks (feedback from student appraisal) of modules with two, three and four assessments for the 2014/15 NATSCI modules of the School of Natural Sciences and Psychology, LJMU.

Assmnt	Mean mark	SD	Mean module appraisal	SD	n
2	59.5	5.2440	83.0	5.55	6
3	61.0	5.0227	79.98	7.092	45
4	64.6	5.8992	86.20	5.167	5

### Discussion

Overall, results of this study suggest that there is no clear advantage to decreasing the

number of assessments in terms of student performance or satisfaction. They highlight the need for further discussion and investigation, since there is no available data in the pedagogic literature to which they can be compared, in order to establish whether fewer assessments are really the way forward. However, these results should be taken with care, since some of the main trends were non-significant, potentially due to limited data availability and/or unbalanced number of modules with two, three and four assessments. In addition, the use of grades to reflect achievement and learning by students may not be completely accurate (Yorke, 2010; 2011), especially when levels of support and guidance may vary so enormously across modules and degree programmes and institutions (Knight, 2007).

### Is overassessment a real problem in HE?

The main problem with overassessment seems to be the ambiguous nature of the term and the fact that it lacks a clear definition. Some authors relate it to an imbalance between summative versus formative assessments (e.g. Price et al., 2011), while others link it more to the same learning outcomes being addressed in different ways (cf. George, 2009), too many learning outcomes (cf. Hornby and Laing, 2003) or a lack of diversity in assessment methods (i.e. repeated use of the same type of assessment, Hornby and Laing, 2003). Student views on overassessment can be just as ambiguous: students tend to report that they are overworked, even those who study fewer hours than expected, but then describe an ideal assessment regime that comes very close to the one in practice (Jonkman et al., 2006).

This study addresses overassessment from a quantitative point of view, and it uses the number of summative assessments as the target metric. Summative assessments are important for optimal achievement of learning outcomes and skill acquisition, and essential as a performance indicator for

students, institutions, employers and quality agencies (Knight 2002b). The trends found in this study suggest that more, rather than fewer, assessments are related to higher average grades in modules. This is not surprising, since several summative assessments can offer a stepwise approach that evaluates student achievement in small, manageable packages, promoting student confidence as they see their progress.

It was also found that modules with more assessments had higher feedback (module appraisal) marks. The relationship between mean marks and feedback was highly positive and significant, which suggests that students were most satisfied with modules in which they did well. Students can sometimes feel anxious or perform badly in high-stake assessments, so having fewer, lower stake pieces of work can help them 'recover' from poor performances and offer more flexibility in meeting the needs of different students (Price et al., 2011). Undergraduate students feel that regular assessments (coursework) can help them prepare for an exam (although postgraduate students have the opposite opinion, Jonkman et al., 2006).

The academic frameworks of a growing number of UK universities establish typical undergraduate modules of ten or 20 credits, and one piece of assessment per ten credits. This means that modules often have a maximum of two summative assessments, which, in the light of these findings, merit further discussion about whether this is really the most adequate way forward. If student satisfaction and marks are so strongly linked, and both parameters tend to be higher if there are more assessments, there is a chance that current policy changes may have some undesired consequences.

However, simply increasing the number of assessments per credit may not be a solution. There is the risk of loss of engagement if repetition is perceived, and potential loss of motivation if the stakes associated with each assessment are low.

Time management for both staff and students is another concern: overassess

ment may lead to 'assessment bunching' for students, delays in feedback and a decrease in feedback quality, resulting in ineffective use of staff and student time (Hornby and Laing, 2003). The solution often proposed is to tip the balance from summative to formative assessments. Formative assessments can be the preparation needed for students to cope with 'high stake' summative assessments (Yorke 2003), they are feedback-intensive (Lau 2015) and promote self-regulated learning (Nicol and MacFarlane-Dick 2006). However, simply tipping the balance from summative to formative may just increase the amount, speed and quality of feedback, whilst not addressing the potential problems caused by repetition and potential loss of motivation if there is no grading involved; it may still lead to assessment bunching if not carefully managed.

The 'formative-good, summative-bad' (Lau 2015) dichotomy is clearly an oversimplification of the issue. Overassessment may indeed be a meaningless term (Price et al., 2011), because all types of assessments are important to achieve learning. Academics are seen as shifting roles, from "that of supporter of learning to assessor of achievement" (Yorke 2003: 496), depending on the type of assessment (formative or summative).

Perhaps it is time to move to a more flexible approach and to consider valid assessment schedules to ensure that they are a vehicle for both learning and accreditation? This may be achieved by ensuring that pedagogic, and not merely quantitative, aspects are taken into account in professional practice. HE practitioners could combine the use of available assessment techniques with appropriate time management to produce assessment schedules that provide feedback and development opportunities, and have a positive effect on deeper learning, engagement and learning experience. They

must, at the same time, provide evidence of achievement, learning and satisfy measures of quality. This can be done through improved cross-faculty communication and pedagogic training of staff (Gibbs and Coffey, 2004; Gartland et al., 2013); ensuring that assignments are diverse and tailored to the specific subjects taught (e.g. in Biology - Aikens and Dolan, 2014); and the inclusion of diverse and innovative assessment methods such as e-assessment (Nicol, 2009; Bevitt, 2015), which have been successful in enhancing the student experience and engagement while being relatively time-efficient for teachers.

### Pedagogic research in overassessment

In spite of its methodological limitations, this study has revealed the tip of the iceberg of a complex issue, and one that merits further investigation in order to stimulate discussions that improve the quality of teaching and student satisfaction. This is especially relevant in the light of novel approaches to monitoring 'learning gain' in HE, as mentioned in the UK Government's discussions around their proposed Teaching Excellence Framework (Business Innovations and Skills, 2016).

The first consensus that the pedagogic research community must reach is towards a clear definition for overassessment, either in quantitative (e.g. how many assessments are too many?) or qualitative (e.g. type of assessment, feedback, turnover times, time spent by student and/or staff on assessment) terms, or both. Future quantitative work could be focused on comparing a larger number of modules and marks of modules before and after the transition from more (three/four) to fewer assessments (two/one), thus testing the effect of summative assessment reduction on performance. Large cross-discipline meta-studies would help balance the data (i.e. a balanced number of modules with different number of assessments). The same approach could be replicated for

student appraisal (feedback). Exploring the effects of the number of learning outcomes of modules, or the number of learning outcomes per assessment could also add a more advanced quantitative dimension. With respect to qualitative measures of overassessment, the variety of assessment methods in each module could be explored, coupled with the effects of proportion of summative and formative assessment, and/or the influence of innovative assessment types such as e-assessments; (Nicol, 2009; Bevitt, 2015).

Finally, future approaches should carefully consider the most appropriate metrics to approach the issue. Should marks, or some kind of modified grade index, be used as an indication of achievement? How could learning, or learning gain (McGrath et al., 2015), rather than achievement be tested in the context of overassessment? What other measures could we use to represent overassessment?

### Conclusions

Evidence from this study suggest that if overassessment concerns are going to drive changes in HE practice, then the concept needs to be clearly defined and appropriate methods of testing its effects should be designed and applied in the context of pedagogic research. Addressing overassessment as the number of summative assessments is an oversimplification of the issue and, in any case, the observed trends suggest there is no justification for a reduction in the number of assessments per module on overassessment claims. If current recommendations must stand, then sound pedagogical practice calls for academics to include diversity and innovation in their assessment plans, to ensure the right combination of deeper learning and achievement metrics. Improved pedagogic literacy of staff is essential in order to achieve this.

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